REMARKS

This amendment is intended as a full and complete response to the Action mailed February 27, 2004. In the Action, the Examiner notes that claims 1-25 are pending, of which claims 1-25 stand rejected. By this amendment, claims 1 and 20-22 have been amended, claims 15-16 have been canceled, new claim 26 has been added, and claims 2-14, 17-19, and 23-25 continue unamended.

In view of both the amendments presented above and the following discussion, the Applicants submit that none of the claims now pending in the application are obvious under the provisions of 35 U.S.C. §103. Thus, the Applicants believe that all of the pending claims are now in allowable form.

In the Specification

The Applicants have amended the specification to provide minor grammatical changes, as well as to change various reference numbers to conform to the drawings. The Applicants submit that such changes do not add any new subject matter.

REJECTIONS

REJECTION OF CLAIMS UNDER 35 U.S.C. §103(a)

A. Claims 1-3 and 8-10

The Examiner has rejected claims 1-3 and 8-10 under 35 U.S.C. §103 as being obvious and unpatentable over Edmonds et al. (U.S. Patent No. 6,412,079, hereinafter "Edmonds") in further view of Peters et al. (U.S. Patent No. 6,415,373, hereinafter "Peters"). The rejection is respectfully traversed.

Claim 1 recites:

"In a video distribution system having provider equipment including a head-end, and associated subscriber equipment, an apparatus for improving fault tolerance, comprising:

a server comprising a plurality of server modules for storing content;

a video switch coupled to each of said server modules at said head-end for forwarding requested content from at least one of said plurality of server modules to said subscriber equipment;

> a plurality of head-end controllers coupled to each server module of said plurality of server modules via at least two signal paths, wherein each communication between a head-end controller and a server module is coincidentally sent through the at least two signal paths." (emphasis added).

The test under 35 U.S.C. §103 is not whether an improvement or a use set forth in a patent would have been obvious or non-obvious; rather the test is whether the claimed invention, considered as a whole, would have been obvious. Jones v. Hardy, 110 U.S.P.Q. 1021, 1024 (Fed. Cir. 1984) (emphasis added). Thus, it is impermissible to focus either on the "gist" or "core" of the invention, Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., 230 U.S.P.Q. 416, 420 (Fed. Cir. 1986) (emphasis added). Moreover, the invention as a whole is not restricted to the specific subject matter claimed, but also embraces its properties and the problem it solves. In re Wright, 6 U.S.P.Q. 2d 1959, 1961 (Fed. Cir. 1988) (emphasis added). The mere fact that a prior art structure could be modified to produce the claimed invention would not have made the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992); In re Gordon, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984).

In particular, Edmonds discloses "in FIG. 5, another computer system is shown. A plurality of computers 200 and 202 communicate over a dual bus with a first bus 204 and a second bus 206. Additionally, a first Ethernet switch 210 is connected to the first bus 204. The Ethernet switch 210 may be the Cisco 2900 switch. The Ethernet switch 210 in turn is connected to an Internet pool of Web servers 214. Servers 214 support Web content retrieval, email, database management, and system management. The Ethernet switch 210 is also connected to a first director 216 as well as a second director 220. The first director 216 in turn communicates with an Internet router 222. The Internet router 222 is also connected to a hub 226 and to the Internet 160." (See Edmonds, col.7, lines 23-35). Nowhere in Edmonds is there any teaching or suggestion of "a plurality of head-end controllers coupled to each server module of said plurality of server modules via at least two signal paths, wherein each communication between a head-end controller and a server module at said head-

end is coincidentally sent through the at least two signal paths." Thus, Edmonds merely discloses a single director (e.g., director 216) is coupled to a server (e.g., web server 214 through a single path (e.g., Ethernet switch 210), as opposed to each director being coupled to each server module via at least two signal paths.

The Applicants' invention provides "that an active 'primary' head-end controller sends two messages having the same information to the particular server module containing the video information requested by a subscriber. The head-end controller identifies each message with a tag, which is continually incremented every time a new message is transmitted. In this manner, the head-end controller may track each message and response. In step 204, each message is routed through a different Ethernet switch via a different signal path. Thus, both messages are sent to the same destination, i.e., server module, but through alternate, redundant signal paths." (See Applicants' specification, page 6, line 26 to page 7, line 2, and FIGS. 1a and 1b). Therefore, the Edmonds reference fails to teach or suggest "a plurality of head-end controllers coupled to each server module of said plurality of server modules via at least two signal paths, wherein each communication between a head-end controller and a server module at said head-end is coincidentally sent through the at least two signal paths."

The Examiner's Official Notice fails to bridge a substantial gap as between Edmonds and the Applicants' Invention. The Examiner's Official Notice merely provides that the video data may be sent across a network. However, nowhere in Edmonds or the Examiner's official notice, is there any teaching of suggestion of how or where the video switch is implemented in conjunction with the teachings of Edmonds. If computers 200 and 202 in FIG. 5 of Edmonds represent the subscriber equipment (see page 4 second paragraph of Office Action with respect to claim 2), then the combination of the Examiner's Official Notice and Edmonds fails to teach or suggest "a video switch coupled to each of said server modules at said head-end for forwarding requested content from at least one of said plurality of server modules to said subscriber equipment." Moreover, the combination of the Examiner's Official Notice and Edmonds fails to teach or suggest "a plurality of head-end controllers coupled to each server

module of said plurality of server modules via at least two signal paths, wherein each communication between a head-end controller and a server module at said head-end is coincidentally sent through the at least two signal paths." Therefore, the combined references fail to teach or suggest the Applicants' invention as a whole.

Furthermore, the Peters reference fails to bridge a substantial gap as between Edmonds reference, the Examiner's Official Notice, and the Applicants' invention. In particular, Peters discloses dividing data for storage into segments, selecting at least two storage units, and sending the segment to each of the storage units for storage, where the write requests may be asynchronous rather than sequential (see Peters, Abstract, col. 8, lines 45-50, col. 9, lines 1-6 and 55-60). In other words, the data segment is sent to two different destinations (i.e., storage units). By contrast, the Applicants' invention coincidentally sends communications between a head-end controller and a single destination (i.e., server module) through at least two signal paths. Thus, Peters merely discloses storing data segments at two memory locations, as opposed to sending data via at least two paths to a single destination.

Even if the two references and the Examiner's Official Notice could somehow be operably combined, the combined references would merely disclose a single director (e.g., director 216) is coupled to a server (e.g., web server 214 through a single path, data segment is sent to two different destinations via two separate paths, and a video switch for sending data across a network. The combined references do not teach or suggest the applicants' invention, since the references fail to teach or suggest "a plurality of head-end controllers coupled to each server module of said plurality of server modules via at least two signal paths."

Moreover, none of the references teach or suggest that "each communication between a head-end controller and a server module is coincidentally sent through the at least two signal paths. Rather, the Peters reference teaches that the data segments are sent either asynchronously or sequentially. By contrast, the Applicants' invention sends the communications coincidentally (i.e., contemporaneously or at the same time) between the head-

end controller and the server module. Therefore, the combination of Edmonds and Peters falls to teach or suggest the Applicants' invention as a whole.

As such, the Applicants submit that independent claim 1 is not obvious and fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder. Furthermore, claims 2-3 and 8-10 depend from independent claim 1 and recite additional features thereof. As such, and for at least the same reasons discussed above, the Applicants submit that these dependent claims are not obvious and fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder. Therefore, the Applicants respectfully request that the rejections be withdrawn.

B. Claims 4-7

The Examiner has rejected claims 4-7 under 35 U.S.C. 103(a) as being unpatentable over Edmonds in further view of Peters and Fujisaki et al. (U.S. Patent No. 6,466,574, hereinafter Fujisaki). The Applicants respectfully traverse the rejection.

Claims 4-7 depend from independent claim 1 and recite additional features thereof. In particular, claims 4-7 recite in part:

> "In a video distribution system having provider equipment including a head-end, and associated subscriber equipment, an apparatus for improving fault tolerance, comprising:
> a server comprising a plurality of server modules for storing content;
> a video switch coupled to each of said server modules at said head-end for forwarding requested content from at least one of said plurality of server modules to said subscriber equipment;
> a plurality of head-end controllers coupled to each server module of said plurality of server modules via at least two signal paths, wherein each communication between a head-end controller and a server module is coincidentally sent through the at least two signal paths." (emphasis added).

As discussed above, the combination of Edmonds, Examiner's Official Notice, and Peters merely disclose a single director (e.g., director 216) is coupled to a server (e.g., web server 214 through a single path, data segment is sent to two different destinations via two separate paths, and a video switch for sending data across a network. The combined references do not teach or suggest the

applicants' invention, since the references fail to teach or suggest "a plurality of head-end controllers coupled to each server module of said plurality of server modules via at least two signal paths."

Moreover, none of the references teach or suggest that "each communication between a head-end controller and a server module is coincidentally sent through the at least two signal paths." Rather, the Peters reference teaches that the data segments are sent either asynchronously or sequentially. By contrast, the Applicants' invention sends the communications coincidentally (i.e., contemporaneously or at the same time) between the head-end controller and the server module. Therefore, the combination of Edmonds and Peters fails to teach or suggest the Applicants' invention as a whole.

Furthermore, the Fujisaki reference fails to bridge the gap as between the Edmonds and Peters references, and the Applicants' invention. In particular, Fujisaki discloses communication between two or more computers 260 takes place by sending one or more packets 120 of the message/information over two or more paths (e.g., 275A, 275B, typically 275) through the networks 130. This is done by replicating on or more of the packets 120 in various ways ... and sending those replicas 120R over different paths 275. Different paths (275A, 275B, 275C) are chosen when possible for each of the respective packet's replica(s). These replicas 120R therefore arrive at the same destination computer(s) 260D over different paths (e.g., 275A, 275B, and 275C) by traveling through different routers 110 and different network links 175. In a preferred embodiment, the replicas 120R that are received first are used to make up the received message and the later received replicas 120R are discarded. (See Fujisaki, col. 5, lines 36-49 and col. 6, lines 50-64).

Nowhere in Fujisaki is there any teaching or suggestion that "a plurality of head-end controllers coupled to each server module of said plurality of server modules via at least two signal paths." Moreover, none of the references teach or suggest that "each communication between a head-end controller and a server module is coincidentally sent through the at least two signal paths." Rather, the paths discussed in the Fujisaki reference are network paths

established by routers and links forming a packet switched network, such as the Internet or an Intranet.

The mere fact that a prior art structure could be modified to produce the claimed invention would not have made the modification obvious unless the prior art suggests the desirability of the modification. In re Fritch, 23 U.S.P.Q. 2d 1780, 1783 (Fed. Cir. 1992); In re Gordon, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984). The Applicants' invention comprises a server, which includes a plurality of server modules, and a video switch coupled to each of the server modules. It is noted that the Applicants define each server module as comprising a processor coupled to a plurality of storage devices (e.g., disk drives). The Applicants' invention further includes a plurality of head-end controllers coupled to each server module via at least two signal paths. Communications between the head-end controller and the server modules occur at the head-end, and are sent coincidentally along the two signal paths therebetween. Therefore, the combination of Edmonds, Peters, the Examiner's Official Notice, and Fujisaki fails to teach or suggest the Applicants' invention as a whole.

As such, the Applicants submit that dependent claims 4-7 are not obvious and fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder. Therefore, the Applicants respectfully request that the rejections be withdrawn.

C. Claim 11

The Examiner has rejected claim 11 under 35 U.S.C. §103(a) as being unpatentable over Edmonds in further view of Peters, the Examiner's Official Notice, and Deitz et al. (U.S. Patent No. 6,578,158, hereinafter Deitz). The Applicants respectfully traverse the rejection.

Claim 11 depends indirectly from claim 1 and recites additional features thereof. In particular, claim 11 recites in part:

> "In a video distribution system having provider equipment including a head-end, and associated subscriber equipment, an apparatus for improving fault tolerance, comprising:
> a server comprising a plurality of server modules for storing content;

a video switch coupled to each of said server modules at said head-end for forwarding requested content from at least one of said plurality of server modules to said subscriber equipment;

a plurality of head-end controllers coupled to each server module of said plurality of server modules via at least two signal paths, wherein each communication between a head-end controller and a server module is coincidentally sent through the at least two signal paths." (emphasis added).

As discussed above, the combination of Edmonds, Examiner's Official Notice, and Peters merely disclose a single director (e.g., director 216) is coupled to a server (e.g., web server 214 through a single path, data segment is sent to two different destinations via two separate paths, and a video switch for sending data across a network. The combined references do not teach or suggest the applicants' invention, since the references fail to teach or suggest "a plurality of head-end controllers coupled to each server module of said plurality of server modules via at least two signal paths."

Moreover, none of the references teach or suggest that "each communication between a head-end controller and a server module is coincidentally sent through the at least two signal paths." Rather, the Peters reference teaches that the data segments are sent either asynchronously or sequentially. By contrast, the Applicants' invention sends the communications coincidentally (i.e., contemporaneously or at the same time) between the head-end controller and the server module. Therefore, the combination of Edmonds and Peters fails to teach or suggest the Applicants' invention as a whole.

Furthermore, Deitz fails to bridge a substantial gap as between the Edmonds, Examiner's official notice, and Peters references, and the Applicants' invention. In particular, Deitz discloses the performing a fault detection operation in which the controllers exchange a series of "pings," also referred to as heart-beat signals, the response of which indicates to each controller that the other has not failed. A detection of a controller failure, a fail-over procedure is performed on the surviving controller, where the fail-over procedure involves the steps of disabling the fail controller and assuming the identity of the failed controller. (See Deitz, col. 7, lines 30-50).

Even if the four references could somehow be operably combined, the combined references would merely disclose a single director (e.g., director 216) is coupled to a server (e.g., web server 214 through a single path, data segment is sent to two different destinations via two separate paths, a video switch for sending data across a network, and performing a fault detection operation in which the controllers exchange a series of "pings." However, the combined references fail to teach or suggest the Applicants' claimed features of "a video switch coupled to each of said server modules at said head-end for forwarding requested content from at least one of said plurality of server modules to said subscriber equipment," and "a plurality of head-end controllers coupled to each server module of said plurality of server modules via at least two signal paths, wherein each communication between a head-end controller and a server module is coincidentally sent through the at least two signal paths." Therefore, the combined references fail to teach or suggest the Applicants' invention as a whole.

As such, the Applicants submit that dependent claim 11 is not obvious and fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

D. Claims 12-14

The Examiner has rejected claims 12-14 under 35 U.S.C. 103(a) as being unpatentable over Edmonds in further view of the Examiner's Official Notice, Peters, Deitz, and Miyamoto et al. (U.S. Patent No. 5,845,061, hereinafter Miyamoto). The Applicants respectfully traverse the rejection.

Claims 12-14 depend indirectly from independent claim 1 and recite additional features thereof. As discussed above, the combination of Edmonds, the Examiner's Official Notice, Peters, and Deitz merely disclose a single director (e.g., director 216) is coupled to a server (e.g., web server 214 through a single path, data segment is sent to two different destinations via two separate paths, a video switch for sending data across a network, and performing a fault detection operation in which the controllers exchange a series of "pings." However, the combined references fail to teach or suggest the Applicants' claimed features of "a video switch coupled to each of said server modules at said head-end for

forwarding requested content from at least one of said plurality of server modules to said subscriber equipment," and "a plurality of head-end controllers coupled to each server module of said plurality of server modules via at least two signal paths, wherein each communication between a head-end controller and a server module is coincidentally sent through the at least two signal paths." Therefore, the combined references fail to teach or suggest the Applicants' invention as a whole.

Furthermore the Miyamoto reference fails to bridge the gap as between these four references and the Applicants' invention. In particular, Miyamoto discloses a state administration table that includes a disk processing ID portion and a process state portion. In the disk processing ID portion, an identifier of the disk processor to be monitored for a fault is registered. As the identifier, a process number peculiar to the disk processor of a memory address in which the disk processor is located is used. In the process state portion, the state of the disk processor is registered. The registered content is either "normal state" or "occurrence of fault" (see Miyamoto, col. 11, lines 15-60).

Nowhere in the combination of the five references is there any teaching or suggestion of the Applicants' claimed features of "a video switch coupled to each of said server modules at said head-end for forwarding requested content from at least one of said plurality of server modules to said subscriber equipment," and "a plurality of head-end controllers coupled to each server module of said plurality of server modules via at least two signal paths, wherein each communication between a head-end controller and a server module is coincidentally sent through the at least two signal paths." Therefore, the combined references fail to teach or suggest the Applicants' invention as a whole.

As such, the Applicants submit that claims 12-14 are not obvious and fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder. Therefore, the Applicants respectfully request that the rejections be withdrawn.

E. Claims 15 and 16

The Examiner rejected claims 15 and 16 under 35 U.S.C. §103(a) as being unpatentable over Fujisaki. The Applicants have canceled claims 15 and 16. Therefore the rejection is now considered as being moot.

F. **Claims 20-25**

The Examiner has rejected claims 20-25 under 35 U.S.C. 103(a) as being unpatentable over Edmonds in further view of Deitz and the Examiner's Official Notice. The Applicants respectfully traverse the rejection.

1) Claims 20-21

The Applicants have amended independent claim 20 to further clarify the features the Applicants' consider as being inventive. In particular, independent claim 20, as amended, recites:

> "In a video distribution system having provider equipment and associated subscriber equipment, a method of improving fault tolerance at a video switch comprising a plurality of I/O ports and a plurality of switch controllers for providing content from said provider equipment to said subscriber equipment, said method comprising the steps of:
> a) sending a periodic pinging command from an origination I/O port to a destination I/O port of said plurality of I/O ports via a primary switch controller of said video switch for testing a switch matrix of said primary switch controller;
> b) setting a timer of said origination I/O port upon sending said periodic pinging command;
> c) sending an acknowledgement signal from said destination I/O port to said origination I/O port via said switch matrix of said primary switch controller;
> d) monitoring status of a status register in said origination I/O port via a secondary switch controller;
> e) resetting said timer via said control register in an instance where said timer of said origination I/O port elapses before said switch matrix of said primary switch controller sends said acknowledgement to said origination I/O port; and
> f) repeating steps (a-e) for each of said I/O ports of said plurality of I/O ports, wherein each I/O port alternately serves as an origination I/O port and a destination I/O port." (emphasis added).

Edmonds merely discloses "transferring data on either a first active backplane coupled to each first network connection of each processor or second active backplane coupled to each second network connection of each processor, the second active backplane operating in lieu of the first active backplane in case

of a fail-over." (See Edmonds', col. 2, lines 34-38). Edmonds fails to teach or suggest a video switch comprising a plurality of I/O ports, sending a periodic pinging command from an origination I/O port to a destination I/O port of said plurality of I/O ports via a primary switch controller of said video switch for testing a switch matrix of said primary switch controller, setting a timer of said origination I/O port, monitoring status of a status register in said origination I/O port via a secondary switch controller, resetting said timer via said control register, and repeating steps (a-e) for each of said I/O ports. In fact, Edmonds is completely silent with respect to a video switch having a plurality of I/O ports, as well as sending pinging messages between the I/O ports for testing a switch matrix of a head-end controller.

Furthermore, the Deitz reference fails to bridge the substantial gap as between the Edmonds reference and the Applicants' invention. Specifically, Deitz discloses "[d]uring normal operations a fault detection step 230 is executed in which the controllers 105 exchange a series of "pings," also referred to as a heartbeat signal, the response to which, ..., signals to each controller that the other has not failed." (see Deitz, col. 7, lines 35-39 (emphasis added)).

Further, the Examiner's Official Notice that it is well known in the art to send video data across a network, and it is well known in the art to use a switch matrix for routing signals, in combination with the two references fail to teach that the I/O ports may be utilized to test the operations of a switch controller. However, the combined references disclose that it is two controllers 105a and 105b that exchange pinging messages therebetween (see Deitz, col. 7, lines 35-39), as opposed to the I/O ports of the video switch that send and receive the pinging messages.

Thus, the combined references merely disclose transferring pinging messages between controllers on either a first active backplane coupled to each first network connection of each processor or second active backplane coupled to each second network connection of each processor, the second active backplane operating in lieu of the first active backplane in case of a fail-over. However, neither reference, either singularly or in combination, teach or suggest the steps of sending a periodic pinging command from an origination I/O port to a

destination I/O port of said plurality of I/O ports via a primary switch controller of said video switch for testing a switch matrix of said primary switch controller, setting a timer of said origination I/O port, monitoring status of a status register in said origination I/O port via a secondary switch controller, resetting said timer via said control register, and repeating steps (a-e) for each of said I/O ports. Therefore the combined references fail to teach or suggest the Applicants' invention as a whole.

As such, the Applicants submit that independent claim 20 is not obvious and fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder. Moreover, claim 21 depends from independent claim 20 and recites additional features thereof. As such and for at least the same reasons discussed above, the Applicants submit that this dependent claim is not obvious and fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder. Therefore, the Applicants respectfully request that the rejections be withdrawn.

2) Claims 22-25

The Applicants have amended independent claim 22 to further clarify the features the Applicants' consider as being inventive. In particular, independent claim 22, as amended, recites:

> "In a video distribution system having provider equipment and associated subscriber equipment, a method of improving fault tolerance at a video switch comprising a plurality of I/O ports and a plurality of switch controllers for providing content from said provider equipment to said subscriber equipment, said method comprising the steps of:
> sending a periodic polling command to a control register in each of said plurality of I/O ports via a primary switch controller of said plurality of switch controllers;
> setting a timer in each said I/O port via said control register upon receiving a respective periodic polling command;
> monitoring status of a status register in each said I/O port via a secondary switch controller; and
> setting an error message in a status register of an I/O port of said plurality of I/O ports, in an instance where a respective timer of said I/O port elapses before an associated control register resets said timer from a next polling command." (emphasis added).

As discussed above, Edmonds merely discloses "transferring data on either a first active backplane coupled to each first network connection of each processor or second active backplane coupled to each second network connection of each processor, the second active backplane operating in lieu of the first active backplane in case of a fail-over." (See Edmonds', col. 2, lines 34-38). Edmonds fails to teach or suggest the steps of sending a periodic polling command to a control register in each of said plurality of I/O ports via a primary switch controller of said plurality of switch controllers, setting a timer in each said I/O port via said control register upon receiving a respective periodic polling command, monitoring status of a status register in each said I/O port via a secondary switch controller, and setting an error message in a status register of an I/O port of said plurality of I/O ports, in an instance where a respective timer of said I/O port elapses before an associated control register resets said timer from a next polling command. In fact, Edmonds is completely silent with respect to a video switch having a plurality of I/O ports, as well as sending pinging messages between the I/O ports for testing a switch matrix of a head-end controller.

The Deitz reference fails to bridge the substantial gap as between the Edmonds reference and the Applicants' Invention. Specifically, Deitz discloses "[d]uring normal operations a fault detection step 230 is executed in which the controllers 105 exchange a series of "pings," also referred to as a heartbeat signal, the response to which, ..., signals to each controller that the other has not failed." (see Deitz, col. 7, lines 35-39 (emphasis added)).

Further, the Examiner's Official Notice that it is well known in the art to send video data across a network, and it is well known in the art to use a switch matrix for routing signals, in combination with the two references fail to teach that the I/O ports may be utilized to test the operations of a switch controller. However, the combined references disclose that it is two controllers 105a and 105b that exchange pinging messages therebetween (see Deitz, col. 7, lines 35-39), as opposed to the I/O ports of the video switch that send and receive the pinging messages.

Thus, the combined references merely disclose transferring pinging messages between controllers on either a first active backplane coupled to each

first network connection of each processor or second active backplane coupled to each second network connection of each processor, the second active backplane operating in lieu of the first active backplane in case of a fail-over. In other words, the combined references operate by sending pinging messages between controllers, as opposed to the Applicants' invention that sends polling commands to each of the I/O ports, where the timers are set and associated status registers are monitored by another controller.

Thus, neither reference, either singularly or in combination, teach or suggest the steps of sending a periodic polling command to a control register in each of said plurality of I/O ports via a primary switch controller of said plurality of switch controllers, setting a timer in each said I/O port via said control register upon receiving a respective periodic polling command, monitoring status of a status register in each said I/O port via a secondary switch controller, and setting an error message in a status register of an I/O port of said plurality of I/O ports, in an instance where a respective timer of said I/O port elapses before an associated control register resets said timer from a next polling command. Therefore the combined references fail to teach or suggest the Applicants' invention as a whole.

As such, the Applicants submit that independent claim 22 is not obvious and fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder. Moreover, claims 23-25 depend from independent claim 22 and recite additional features thereof. As such and for at least the same reasons discussed above, the Applicants submit that these dependent claims are also not obvious and fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder. Therefore, the Applicants respectfully request that the rejections be withdrawn.

G. Claims 17-19

The Examiner has rejected claims 17-19 under 35 U.S.C. 103(a) as being unpatentable over Edmonds in further view of Miyamoto. The Applicants respectfully traverse the rejection.

Claim 17 recites:

"In a video distribution system having provider equipment including a head-end, and associated subscriber equipment, a method of improving fault tolerance at a video switch, said method comprising the steps of:

asserting a switch controller READY signal at each of a plurality of switch controllers of said video switch at said head-end;

performing self-diagnostic tests and asserting a switch controller OK signal upon passing said self-diagnostic tests at each of said switch controllers;

indicating primary switch controller functionality by asserting a respective ONLINE signal by one of said plurality of switch controllers;

indicating secondary switch controller functionality by de-asserting a respective switch controller ONLINE signal;

monitoring said switch status via a secondary switch controller; and

initiating a switchover event in an instance where said primary switch controller is determined to be inoperable." (emphasis added).

Edmonds discloses:

Directors recognize a Universal Resource Locator (URL) or Internet Protocol (IP) address as being associated with a pool of servers. If a server becomes unavailable, the server request is simply put in a slow poll mode and server requests are not sent to it until it starts responding. Directors provide various load-balancing algorithms to even out the load among a pool of servers. These devices assure high availability and scalability. By using directors 216 and 220 within such a clustered system, provisioning active/active pools of servers can be provided using of the shelf components to assure scalable, load balanced, fault tolerant access to clients to all server resources (see Edmonds, col. 7, lines 44-55 (emphasis added)).

Thus, the Edmonds reference discloses that the directors are used to provide load balancing and fault tolerance when a server becomes unavailable to a client. Nowhere in the Edmonds reference is there any teaching or suggestion of "initiating a switchover event in an instance where said primary switch controller is determined to be inoperable." In other words, the Edmonds reference fails to teach or suggest "monitoring the switch status of the primary switch controller via the secondary switch controller," as well as "initiating a switchover event in an instance where said primary switch controller is determined to be inoperable."

Furthermore, Miyamoto fails to bridge a substantial gap as between Edmonds and the Applicants' invention. In particular, Miyamoto merely discloses "by performing polling for the disk processor, the fault monitor 803 always

monitors the disk processor to check whether a fault has occurred in the disk processor. When a fault has occurred, the fault monitor 803 updates contents of the state administration table 806 and starts the fault recovery unit 804. The fault recovery unit 804 conducts recovery processing such as restart-up of the disk processor in which a fault has occurred (see Miyamoto, col. 11, line 1 to col. 12, line 17).

Even if the two references could somehow be operably combined, the combination would merely disclose provide load balancing and fault tolerance when a server becomes unavailable to a client. In fact, both references are completely silent with respect to a video switch, as well as a plurality of video switch controllers. Nowhere is there any teaching or suggestion that the fault tolerance implemented for the servers/ disk processors of the Edmonds and Miyamoto references is applicable to a video switch.

That is, nowhere in the combined references is there any teaching or suggesting of improving fault tolerance at a video switch in a manner as set forth and claimed by the Applicants. Thus, the two references fail to teach or suggest the six steps of asserting a switch controller READY signal at each of a plurality of switch controllers of said video switch at said head-end, performing self-diagnostic tests and asserting a switch controller OK signal upon passing said self-diagnostic tests at each of said switch controllers, indicating primary switch controller functionality by asserting a respective ONLINE signal by one of said plurality of switch controllers, indicating secondary switch controller functionality by de-asserting a respective switch controller ONLINE signal, monitoring said switch status via a secondary switch controller, and initiating a switchover event in an instance where said primary switch controller is determined to be inoperable. Therefore, the combined references fail to teach or suggest the Applicants' invention as a whole.

As such, the Applicants submit that independent claim 17 is not obvious and fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder. Moreover, claims 18-19 depend from independent claim 17 and recite additional features thereof. As such and for at least the same reasons discussed above, the Applicants submit that these dependent claims are not

obvious and fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder. Therefore, the Applicants respectfully request that the rejections be withdrawn.

CONCLUSION

Thus, the Applicants submit that the pending claims are in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner telephone Steven M. Hertzberg or Eamon J. Wall at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

5/27/04

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